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November 18, 1998

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VIA HAND DELIVERY

Magalie Roman Salas, Esq.
Secretary
Federal Communications Commission
1919 M Street, N.W.
Room 222
Washington, D.C. 20554



Re: IB Docket No. 98-172
RM-9005
RM-9118

Dear Ms. Salas:

Transmitted herewith, on behalf of Capitol Broadcasting Co., Inc. and its subsidiaries, are an original and eight (8) copies of their Joint Comments in the above- referenced docket.

An extra copy of the filing is enclosed. Please date-stamp the extra copy and return it to the courier for return to me.

Very truly yours,

HOLLAND & KNIGHT LLP

Marvin Rosenberg
Counsel for Capitol Broadcasting Co., Inc.
and Its Subsidiaries

mr;ewd
Enclosures
cc: Ms. Judy Boley, FCC (By Hand)

**BEFORE THE**

# Federal Communications Commission

**WASHINGTON, D.C. 20554**



| | | |
|---|---|---|
| In the Matter of | ) | |
| | ) | |
| Redesignation of the 17.7-19.7 GHz Frequency | ) | |
| Band, Blanket Licensing of Satellite | ) | IB Docket No. 98-172 |
| Earth Stations in the 17.7-20.2 GHz and | ) | RM-9005 |
| 27.5-30.0 GHz Frequency Bands, | ) | RM-9118 |
| and the Allocation of Additional Spectrum | ) | |
| in the 17.3-17.8 GHz and 24.75-25.25 GHz | ) | |
| Frequency Bands for Broadcast | ) | |
| Satellite-Service Use | ) | |

To: The Commission

## JOINT COMMENTS OF CAPITOL BROADCASTING CO., INC. AND ITS SUBSIDIARIES

Capitol Broadcasting Co., Inc. ("Capitol") and its subsidiaries, Local TV on Satellite LLC ("LTVS") and Microspace Communications, Inc. ("Microspace"), by its attorneys, hereby submit these comments in response to the *Notice of Proposed Rule Making* released by the Federal Communications Commission on September 18, 1998 in the above-referenced docket. *Notice of Proposed Rule Making*, IB Docket No. 98-172, RM-9005, RM-9118 (rel. Sept. 18, 1998) (*"NPRM"*).

Capitol is a diversified communications company that owns and operates broadcast stations WRAL-TV and WRAL-FM in Raleigh and WJZY-TV in the Charlotte, North Carolina market. In addition to its radio and television stations, Capitol also has a number of subsidiaries, including Microspace and LTVS, that are engaged in other innovative communications services. Capitol, along with Microspace and LTVS, has designed and is now developing a geosynchronous satellite

TV broadcast system that proposes to utilize the Ka frequency band. Using spot-beam technology, the LTVS service will deliver programming from all full-power TV stations within a Designated Market Area ("DMA") to subscribers in that DMA via direct-to-home satellite transmissions. This service will supplement the programming of Direct Broadcast Satellite providers operating in the 101° to 119° orbital arc.

Capitol does not currently possess an FCC license or an orbital slot assignment for the proposed LTVS system. Capitol is currently negotiating with GSO licensees to acquire the rights to a slot. Capitol has an interest in this proceeding because the issues raised herein will affect the ongoing negotiations and the ultimate success of the proposed LTVS venture.

Capitol's technical consultants have reviewed the *NPRM* and their comments are attached hereto for the Commission's consideration in reaching its Report and Order in this proceeding.

Respectfully submitted,

CAPITOL BROADCASTING CO., INC.
AND ITS SUBSIDIARIES

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Patricia Y. Lee
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Their Attorneys

November 18, 1998

Federal Communications Commission Docket No. 98-235
Notice of Proposed Rule Making
Comments Submitted by Capitol Broadcasting and Its Subsidiaries

## PREPARATION

The material in this document was prepared for Capitol Broadcasting by Worldwide Satellite Broadcasting, Inc., 2050 W 190th Street, Suite 210, Torrance, CA 90504. The author of the document is C.T. Hasty.

## INTRODUCTION

Capitol Broadcasting, Inc., 2619 Western Blvd., Raleigh, NC 27605, submits the following information and Comments as an interested party in the FCC Docket No. 98-235- "Redesignation of the 17.7-19.7 GHz Frequency Band, Blanket Licensing of Satellite Earth Stations in the 17.7-20.2 GHz and 27.5-30.0 GHz Frequency Bands, and the Allocation of Additional Spectrum in the 17.3-17.8 GHz and 24.75-25.25 GHz Frequency Bands for Broadcast Satellite Use".

## CAPITOL PROJECT "LOCAL TV ON SATELLITE"

Capitol Broadcasting Inc. of Raleigh, NC, with its subsidiaries Local TV on Satellite LLC (LTVS) and Microspace Communications Inc., has designed and is now developing a geosynchronous satellite TV broadcast system that proposes to utilize the Ka frequency band. The LTVS service will deliver programming from all full-power TV stations within a local market to subscribers in that market via direct-to-home satellite transmissions. End-users will be equipped with small antennas and TV set-top boxes capable of receiving the LTVS satellite signal in conjunction with one of the conventional DBS services. The LTVS network will be capable of delivering both SDTV and HDTV as defined by the ATSC broadcast standard. Local market is defined as the Nielsen Designated Market Area (DMA). Only stations within the end user's DMA will be delivered to the subscriber. The spot-beam capabilities of the Ka-band will be fully utilized, with a high rate of frequency re-use and selective signal polarization. Conditional access encryption of the TV signal will further refine which end-user can receive the programming in each DMA.

The LTVS service is intended to supplement the programming of the direct broadcast satellite providers operating in the 101° to 119° orbital arc. Specific requirements have been considered for inter-operability with such DBS systems. The schedule for full operation of the first satellite and start of revenue services is December 2001.

Capitol Broadcasting does not currently possess a FCC license or an orbital slot assignment for the proposed LTVS system. Discussions with current GSO licensees are proceeding, with the intent to acquire the rights to a slot. The issues on the FCC Docket 98-235 are very important to the outcome of these negotiations and the success of the proposed LTVS venture. Capitol submits below further information and Comments to assist in the final determination of the issues of Docket 98-235.

## LTVS SYSTEM DESIGN REQUIREMENTS

The Capitol/LTVS design will exploit the spot-beam capabilities of the Ka-band, and push the limits of frequency reuse and bandwidth to bring true ATSC high definition TV to a maximum number of homes via satellite. The satellite design required to bring such high-bit-rate, high-powered signals back to earth will also push the limits of current satellite designs. The key Ka-band parameters desired by LTVS:

1. 1000 MHz bandwidth, with minimum interference coordination with other users.
2. Blanket licensing for its receive stations over the 1000 MHz.
3. Minimum uplink frequency coordination.

The current allocation in the Ka-Band, and the changes proposed in FCC 98-235 NPRM are summarized in the below table of the proposed LTVS band utilization and conflicts.

**Table 1: Capitol/LTVS Ka-Band Utilization Conflicts**

| Band | Uplink (LTVS position) | Downlink (LTVS position) | Translation GHz | Band-width MHz |
|---|---|---|---|---|
| Low | 28.35 – 28.60 (Sole primary) | 18.30 – 18.55 (Sole primary) (Blanket licensing) ***(FS users grandfathered)*** | ***10.05*** | 250 |
| Mid | 29.25 – 29.50 ***(Co-primary with MSS feeder links)*** | 18.55 – 18.80 ***(Co-primary with terrestrial) (No blanket license) (Power limits in 18.6-18.8 band)*** | ***10.7*** | 250 |
| High | 29.50 – 30.00 (Sole primary) | 19.70 – 20.20 (Sole primary) (Blanket licensing) | 9.8 | 500 |

Problem areas for the LTVS application are shown in bold above and discussed further below:

A. Segmentation of the available frequencies and the non-symmetric up-link/downlink bands require multiple translation frequencies in the satellites, and complicates the design of the LTVS user receive terminal.

B. Although LTVS may be the sole primary user in the 18.30-18.55 GHz band, its ubiquitous receive stations will probably be interfered with by the "grandfathered" FS systems, particularly with the CARS radiation in urban areas.

C. The co-primary status with MSS feeder links in the 29.25-29.50 GHz uplink will probably create many specific coordination demands, dictated by a particular DMA, its spot beam footprint, and the location of local TV broadcast facilities.

D. The downlink mid-band conflicts (shared with FS, no blanket license, limited PFD) make 18.55-18.80 GHz virtually unusable to LTVS. This limits LTVS to 750 MHz downlink bandwidth, reducing the number of channel frequencies available, and forcing a more difficult frequency reuse requirement.

## GENERAL COMMENTS

The local-into-local satellite TV service being developed by Capitol/LTVS places the needs of the general USA public uppermost in its goals. The LTVS service will provide a low-cost, ubiquitous alternative to cable signal suppliers for all full-power TV signals in a served market, provide superior off-air signals for B-zone viewers, and finally answer the issue of local TV signal delivery to "white areas" of a given DMA. Capitol Broadcasting will continue to petition the FCC and all users of the Ka-band for appropriate frequency allocations and assignments to make this worthy goal achievable within the cost and technology constraints of its business plan. The following discussion is submitted in support of the Capitol/LTVS endeavors.

### Net Bandwidth of 1 GHz

The LTVS bandwidth requirement is particularly onerous, in that its goal is to transmit ATSC signals to as many home viewers in as many markets at the highest resolution possible. Spot beams, signal polarization, and channel frequency reuse will facilitate the access to DMAs, but high rates of frequency reuse could cause an unacceptable level of interference in adjacent or nearby beams. A frequency re-use factor of 16 combined with 1 GHz of spectrum will allow LTVS to reliably implement its system.

### FS Services in the 18.30 – 18.55 GHz Band

Capitol/LTVS does not see how allowing the existing FS (CARS) services in the 18.30–18.55 GHz will work. The installed base of point-to-multipoint FS services is totally incompatible with the LTVS deployment of consumer receive stations. If each of the FS links that interferes must be discovered by actual field deployment and customer complaint, it will work a hardship on the early market launch of the LTVS service. The inconvenience to the public will be difficult to explain, and the damage to the LTVS service irreparable.

We understand that a Joint Working Group (18 GHz) is trying to define allocations to produce one "FS-Free" 250 MHz band for GSO/FSS use by swapping the FS services out of the 18.55–18.80 GHz band, and moving the GSO/FSS primary assignment from 18.30-18.55 GHz to the free band. This move is agreeable to Capitol/LTVS only if:

1. 18.55-18.80 GHz is totally free of FS radiations.

2. The current Power Flux Density limits of 18.55-18.80 GHz are revised to the equivalent of the other GSO/FSS assigned bands (-118 dBW/$m^2$/MHz).

The Capitol/LTVS requirement is for at least 1000 MHz net bandwidth in both uplink and downlink; the above discussion is in reference to only one 250 MHz segment.

### FS Services in the 18.55-18.80 GHz Band

As the FS services currently licensed in this shared band with GSO/FSS are primarily finite, point-to-point terrestrial links, it is feasible that LTVS could coordinate specific interference problems with the operators of these services. It would be probable that debilitating interference would involve only a few regions and FS links, and most of these cases evident by analysis prior to the launch of the LTVS service in the band. However, without blanket licensing of ubiquitously deployed user receive terminals, LTVS would not be encouraged to enter into any such specific frequency coordination. This fact virtually locks LTVS out of using this supposedly shared band.

The PFD limit as discussed in the previous section also discourages LTVS from considering use of the 18.55-18.80 GHz band.

### Segmentation of the Ka-Band

Segmentation of the available frequencies and the non-symmetric up-link/downlink bands require multiple translation frequencies in the satellites, and complicates the design of the LTVS user receive terminal. Capitol/LTVS requests that these factors be considered in all proposed re-allocation of frequency usage being considered by the FCC.

## COMMENTS SPECIFIC TO FCC 98-235

### Paragraph 34

1. The NPRM rules do not adequately meet the spectrum needs of LTVS.

2. LTVS could not operate in the 18.55-18.80 GHz band with the NPRM, due to the restricted PFD.

3. For GSO/FSS operations in the 17.7-20.2 GHz, secondary operations are not desirable.

### Paragraph 35

LTVS sees no merit for GSO/FSS operators in the modified proposal of this Paragraph.

### Paragraph 36

LTVS will not propose to use any large antenna gateway uplinks in the "18 GHz" bands. Therefore, the assumptions of the modifications in this Paragraph do not apply, and are not appropriate for the LTVS application.

### Paragraph 37

Most GSO/FSS services, and particularly that of LTVS, will require deployment of large numbers of receive earth terminals. Blanket licensing is a necessity.

Assuming blanket licensing of LTVS receive terminals in the 17.7-18.8 GHz band, it is feasible for LTVS to coordinate frequencies and beam interference with point-to-point FS services, but not with point-to-multipoint FS.

LTVS still recommends no GSO/FSS and FS band sharing.

### Paragraph 38

Capitol/LTVS anticipates a workable plan to emerge from the 18 GHz Joint Working Group.

### Paragraph 39

LTVS plans no service coverage outside the USA.

### Paragraph 40

The LTVS system will deploy ubiquitous receive stations in unpredictable locations, making prior coordination impossible. Some minimal interference cases can be predicted for FS point-to-point operations, but for FS point-to-multipoint, the conflicts will be numerous and impossible to mitigate, except for termination of the FS if in a secondary status. Grandfathering of FS operations is not recommended.

### Paragraph 41

LTVS cannot comment on the logistics of modifying or relocating a specific existing FS, but is willing to coordinate with all other users of the 18 GHz bands as necessary. However, with the large numbers of LTVS ground stations, both uplink transmitters and downlink receive terminals, and the limited time before the proposed deployment, interference mitigation on a case-by-case basis is not feasible. Some plan of advanced partitioning of the spectrum is necessary, and we look forward to an equitable plan from the 18 GHz Joint Working Group.

## SUMMARY

Capitol/LTVS respectfully requests the following goals for all GSO/FSS and specifically LTVS Ka-band frequency allocations:

1. A minimum of 1000 MHz net uplink/downlink bandwidth for each orbit.

2. To achieve the 1000 MHz bandwidth, every effort be made to supply symmetric and contiguous uplink/downlink bands

3. Minimal or no sharing, either as Co-primary or Secondary, with any FS services.

4. Blanket licensing for ubiquitously deployed receive terminals in 1000 MHz.

5. That all bands assigned for GSO/FSS use have uniform and adequate PFDs.

The high goals set by Capitol/LTVS to bring digital HDTV to the USA public warrants supporting consideration from all interested parties.